

RADIO VAULT MANAGEMENT

8037

(No. 9 Sept. 1995)

CDF's statewide network of radio vaults and associated antenna towers represent the foundation of the Department's telecommunications system. These facilities, most of them remotely-sited, cannot be allowed to fall into disrepair. They require a program of regular inspection and maintenance. Many agencies besides CDF rely on these sites as vital links in their own radio and microwave systems. The CHP, USFS, BLM, Dept. of Water Resources, numerous Fire Departments/Fire Districts, and numerous law enforcement agencies are among those whose communications equipment jointly occupies CDF-owned radio vaults.

RESPONSIBILITY FOR RADIO VAULTS

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Primary responsibility for a radio vault rests with the unit within which the vault is located. The unit chief has overall responsibility for all vaults in the unit. Individual Battalion Chiefs have direct responsibility for each vault in their battalion's area. It is the task of the unit TCO (ECC Chief) to work in cooperation with the battalion chiefs to ensure that all radio vaults and allied facilities--towers, generators, generator-buildings, fences, access roads, etc.--receive regular inspections and good maintenance. The region TCO is responsible for coordinating with, and assisting, all unit TCOs in proper management and maintenance of radio vaults regionwide. See the "Remotely Located Radio Sites" map {see exhibit}.

Under supervision of the Senior TCO, one Telecommunications Analyst II has statewide responsibility for radio vault management. This TSA II works directly with region and unit TCOs, Telecommunications Division staff, CDF Technical Services staff, Office of Real Estate and Design Services and others in planning, establishing and maintaining vaults and towers.

RADIO VAULT INSPECTIONS AND MAINTENANCE

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Each radio vault will receive at least one "formal" inspection annually, with a written inspection-report prepared by the unit TCO. The report will note all maintenance discrepancies and items requiring repair or attention by battalion personnel, radio technicians, artisans and/or engineers. A copy of the report is to be routed to each member of the inspection team, the appropriate Battalion Chief, the region TCO and Sacramento's radio vault specialist.

Recommended inspection-team: local battalion chief, local TCO, region TCO, region engineer or representative, HQ radio vault specialist.

Advance planning and coordination by the region TCO can maximize the number of vaults visited and inspections performed within a given timeframe. Since most vaults are remote sites requiring long drives, the use of CDF helicopters is encouraged to fly the inspection team from site-to-site. To assure aircraft availability, it is recommended that vault inspection flights be planned for spring and fall, outside normal periods of high fire activity.

Regions and units are responsible for ongoing facility maintenance, once a radio vault is established and operating. Routine repairs and housekeeping should be done as necessary by local battalion personnel. Substantial or costly work requiring the expertise of artisans or engineers should be coordinated by the battalion chief and local TCO. Funding for maintenance of access roads, fences and gates, vault and tower structures, and generators is borne out of region and unit operating accounts in accordance with procedures established by the region. Sacramento Headquarters Telecommunications will be funding utility and rental fees for all remote telecommunications sites effective July 1, 1995. Solar panel repair and replacement will be funded by the CDF HQ telecommunications budget. Rodent or insect problems should be handled by a local exterminator and charged to the CDF HQ telecommunications budget. After infestations have been removed, the unit is responsible for sealing structures to prevent future intrusions.

All communications technicians entering and working in a CDF radio vault are responsible for cleaning up after themselves. There is no excuse for technicians leaving a mess behind. If they do, and the person(s) responsible are known, a call or letter to the appropriate agency supervisor is recommended. The unit TCO is generally in the best position to follow-up on these situations. In any case, the unit should see that each vault has adequate trash receptacles, brooms and simple cleaning supplies. Periodic trash hauling by battalion personnel is a necessary part of vault maintenance.

Certain radio vaults, due to their location, may be subject to frequent vandalism. Special alarm systems may be warranted. The problem should be documented by the local TCO and forwarded through channels to the Senior TCO. It may be possible, with the Telecommunications Division's help, to install--at Sacramento's expense--an alarm or warning system which would improve vault security.

ESTABLISHING OR REPLACING A RADIO VAULT

8037.3

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Generally, radio vaults are sited on peaks or ridges which have been carefully selected to provide a desired range of coverage to the surrounding area. In some cases, they have been situated primarily because they are ideally located for linkage along the state's microwave "backbone" system. Determination of the best sites involves computer analysis by the Telecommunications Division, supplemented by on-the-ground coverage surveys using mobile units, portable mobile relays and local personnel. Requests for radio coverage surveys for new sites should be prepared by the unit TCO, using form COM-207. See form instructions in Section 8060 [{see section}](#). Land and access road ownership(s), together with the availability of commercial power, are critical elements in developing any new radio vault. These factors must be thoroughly explored and resolved before further work is initiated.

Existing radio vaults are on a 25-year replacement cycle. Normal and emergency replacement (earthquake or fire damage) of vaults, towers and generators will be funded by HQ telecommunications management, coordinated through the region and unit. Replacement of a vault and tower is a two-year project.

CDF prefers to control its radio vault sites, as opposed to renting space in a private or other-agency vault. This avoids a number of scenarios which could impair the Department's communications ability or lead to financial or administrative disputes.

Vaults and towers constructed on CDF-managed sites must meet seismic safety standards and vaults must be temperature-controlled as well as weather and rodent proof. Both must have approved grounding systems. Where commercial power is not available, solar power plus LPG for 7-days running of emergency generator is required.

CDF encourages site development by private telecommunications companies which, in exchange for free vault and antenna space, furnish CDF with a vault, tower and generator. CDF maintains site-control in all such cases.

Before any new antenna tower is built, consideration must be given to FAA requirements for tower safety lighting and tower height. All towers are considered aircraft hazards, whether or not they are close to an airport. Tower sizes are limited by the FAA near airports which may hamper CDF's ability to communicate unless acceptable alternatives are implemented.

Prior to construction or replacement of an antenna tower, consideration must be given to potential aesthetic complaints from surrounding property-owners, including USFS and BLM. By diligently tackling these issues up front, the unit is much more likely to engender the lasting goodwill of its neighbors.

Where delivery of prefabricated vaults is not possible, HQ telecommunications management will fund the construction of a block vault by day labor, per CDF engineering specifications.

The cost of repairing roads damaged by delivery of new vaults or towers may be funded by HQ telecommunications management, if not otherwise covered by the installation company's liability insurance.

Basic responsibilities during the vault building process are as follows:

UNIT

1. Identify need, prepare justification and COM-207.
2. Request initial project planning meeting, to include local TCO, local Battalion Chief, region engineering representative, Telecommunications Division engineering representative, region TCO and HQ radio vault specialist.
3. Provide personnel, crews and equipment as required for site-preparation and construction.
4. Investigate aesthetic concerns, follow-up as necessary.
5. Provide unit project coordinator (usually the TCO) to facilitate and guide the project to completion.

REGION

1. Region chief must approve project.
2. Region TCO assists local TCO with project coordination and trouble-shooting.
3. Region engineer provides technical advice and staff-services, as needed, of artisans. Coordinates with engineering section of HQ Technical Services, and HQ radio vault specialist, on materials and specifications. Requests work crews, vehicles and supplies (if needed) through local TCO (ECC Chief). If vault or tower is to be constructed by private contractor, coordinates as required with HQ radio vault specialist to ensure site-work and construction are properly managed.

SACRAMENTO HQ

1. If normal replacement, Senior TCO or staff may initiate process by notifying appropriate region TCO of replacement schedule and requesting an initial planning meeting.
2. HQ radio vault specialist provides project coordination for all radio vault and tower replacements, and all new site vault and tower installations.
3. Assigned staff coordinates with Telecommunication Division, CDF Technical Services, Office of Real Estate Design and Services, Office of Procurement, appropriate regional engineering representative, and contractors/vendors.
4. Senior TCO and Fire Control Operations Coordinator review and approve all projects and identify funding source and expenditure codes.

5. Assigned engineers in Technical Services section provide material and construction specifications, on-site inspections, and coordinate directly with region engineering staff, OREDS and HQ radio vault specialist.

TELECOMMUNICATIONS DIVISION

1. Analyze radio coverage and site capability. Recommend alternate sites, if appropriate.
2. Identify potential radio interference sources, or frequency incompatibility. Recommend technical solutions.
3. Provide technical information on equipment to be installed in vault, number and type of antennas to be replaced or installed, power requirements, size of emergency generator needed.
4. Supervise radio coverage surveys, if necessary.
5. Install, remove, replace and/or relocate all CDF-owned radio and microwave equipment as required. Coordinate with other agency communications technicians regarding installation or relocation of equipment.

RADIO VAULT SPACE LEASES AND RENTAL RATES

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Radio equipment space in vaults, and antenna space on towers, are both marketable commodities and are usually in great demand wherever there is a key mountain-top communications site. CDF pays a substantial amount to other agencies to occupy such space in their facilities. Conversely, CDF collects a substantial amount from those who rent space from our Department. It is important that radio vault space lease agreements be accurate, legal and based on fair market value. The income derived from renting vault and tower space is not all diverted to the state's general fund. A percentage is returned to the respective vault owning agencies.

Vault space lease agreements are managed in the unit by the unit TCO, and at the region by the region TCO. The unit TCO is the key contact person for all individuals, companies or agencies desiring to rent space in a CDF vault. The unit TCO provides information and assistance, and forwards the applicant's completed vault space application, COM-312, through channels to Sacramento HQ telecommunications management. See Section 8060 [{see section}](#).

CDF Technical Services handles the leasing process, which is quite lengthy and time consuming. Leases are generally good for 5 years, after which time it is necessary to renew the lease. Renewals are also handled by Technical Services, but coordinated with the respective region and unit. See "Radio Vault Space Application" [{see exhibit}](#).

OREDS (Office of Real Estate and Design Services) establishes fair market rental rates for all state agency radio vaults and towers. These rates apply to all CDF communications facilities where space is rented. Two different sets of rates are published: one for state agencies and reciprocal nonstate agencies; one for nonreciprocal agencies, groups or individuals.

Unit and region TCOs need to be familiar with lease agreement terms and conditions. During annual vault inspections, the equipment of all vault space tenants should be checked for compliance with requirements of their lease. Radio technicians sometimes report lease violations or improper equipment installation in the vaults they service. In such cases, it is the local TCO's responsibility to contact the tenant and arrange to have the situation corrected.

**RADIO VAULT SPACE APPLICATION, NONSTATE USER,
FORM COM-312**

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Form COM-312, Radio Vault Space Application, Nonstate User, is used by applicants desiring to rent radio vault space from CDF. The form is provided by the local TCO, who forwards the completed application and application fee through channels to HQ telecommunications management. The application is reviewed and sent on to Telecommunications Division for technical review. After it is returned to HQ, the application, if approved, is sent to Technical Services for lease preparation. The lease is sent to the applicant for signature, returned to Technical Services for agency signatures, and then copies of the fully executed lease are routed to all concerned parties. See Section 8060 {see section} and "Radio Vault Space Application" {see exhibit} for form processing details.

New applicants should be informed that lease processing takes from 7 to 12 months.

INTERAGENCY RADIO VAULT SPACE APPLICATION AND PERMIT, FORM COM-310

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Form COM-310, Interagency Radio Vault Space Application and Permit, is used by any state agency desiring to occupy radio vault space in another agency's facility. The form is prepared by the requesting agency and forwarded to the Telecommunications Division's COM-310 coordinator.

Typically, unit and region TCOs do not prepare this form. If one is needed for installing CDF equipment in another agency's vault, it is usually prepared by the Senior TCO or by a Telecommunications Division engineer. Copies of COM-310s involving CDF vaults or CDF radios in another agency's vault, are routed to the appropriate unit and region. These permits are to be filed with COM-312s for each CDF radio vault. Permittees' equipment should be checked for permit compliance during annual vault inspections. See Section 8060 [{see section}](#) for details.

ANTENNA TOWER REPLACEMENT PROGRAM

8037.7

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Numerous 3- and 4-pole wooden antenna towers still form an integral part of CDF's network of mountaintop communications sites. Although these towers have served the Department well for many years, they are rapidly becoming a liability. Deterioration from the elements has affected every wooden tower to some degree. Many are in marginal, or worse, condition with respect to safety of communications technicians and the ability of these towers to withstand heavy ice, snow or wind.

CDF telecommunications management has given high priority to replacing the wooden towers with modern, self-supporting steel towers. Each year as many of the old towers as possible will be upgraded. The key factor is the availability of funds in the CDF telecommunications budget.

Each region TCO should make an annual evaluation of wooden antenna towers in the region, using region engineering expertise as needed. Results, with recommended priority for tower replacements, are to be forwarded to the Senior TCO for statewide prioritization and follow-up.

FORMS AND/OR FORMS SAMPLES: RETURN TO ISSUANCE HOME PAGE FOR FORMS/FORMS SAMPLES SITE LINK.

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